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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/822,247
Filing Date	April 8, 2004
First Named Inventor	Hunziker, Hansjurg
Art Unit	2833
Examiner Name	Figueroa, Felix O.
Attorney Docket Number	112518.00008

Total Number of Pages In This Submission: 30

ENCLOSURES *(Check all that apply)*

- [✔] Fee Transmittal Form
- [ ] Fee Attached
- [ ] Amendment/Reply
- [ ] After Final
- [ ] Affidavits/declaration(s)
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- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
- [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
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Remarks

APPEAL BRIEF

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Robert D. Atkins, Reg. No. 34,288 - QUARLES & BRADY STREICH LANG LLP
Signature	
Date	January 18, 2006

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FEE TRANSMITTAL
For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($) 500

Complete if Known	
Application Number	10/822,247
Filing Date	April 8, 2004
First Named Inventor	Hansiurg Hunziker
Examiner Name	Figueroa, Felix O.
Art Unit	2833
Attorney Docket No.	112518.00008

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 20 or HP =	_____	x _____	= _____

HP = highest number of total claims paid for, if greater than 20

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 3 or HP =	_____	x _____	= _____

HP = highest number of independent claims paid for, if greater than 3

Multiple Dependent Claims	
Fee ($)	Fee Paid ($)
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
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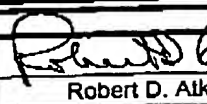
Signature		Registration No. (Attorney/Agent) 34,288	Telephone 602-229-5311
Name (Print/Type)	Robert D. Atkins		Date January 18, 2006

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant(s)	:	Hansjurg Hunziker
Serial Number	:	10/822,247
Date of Filing	:	April 8, 2004
Title	:	*CONNECTOR FOR CABLE EYES*
Art Unit	:	2833
Examiner	:	Figueroa, Felix O.
Confirmation No.	:	1787
USPTO Customer No.	:	26707
Attorney Docket No.	:	112518.00008

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
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Sir:

Appellant(s) submit the following Appeal Brief under 37 C.F.R. § 1.192 appealing the Final Rejection from the USPTO dated August 18, 2005.

I. REAL PARTY IN INTEREST

Power-One, Inc. ("Power-One"), a Delaware Corporation, having a principal place of business at 740 Calle Plano, Camarillo, California 93012, is the real party in interest of the present application. An assignment of all right, title, and interest in the present application to Power-One was executed by

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Power-One Limited, and recorded by the U.S. Patent and Trademark Office at reel 015211, frame 0992.

II. RELATED APPEALS AND INTERFERENCES

Appellant(s) are aware of no appeals or interferences related to the present application.

III. STATUS OF CLAIMS

The present application contains 30 pending claims. Claims 1-15 and 17-29 have been finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Kusuda et al. (US Patent 6,224,430) in view of Cummings (US Patent 5,250,770). Claims 35-36 have been finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Hutchins et al. (US Patent 6,416,356) in view of Cummings et al. Claims 1, 14, 25, and 35 are independent claims. Claims 2-13 depend from claim 1; claims 15 and 17-25 depend from claim 14; claims 26-29 depend from claim 25; and claim 36 depends from claim 35. Claims 1-15, 17-29, and 35-36 are pending. Claims 16 and 30-34 have been canceled. A copy of claims 1-15, 17-29, and 35-36, the claims on Appeal, is enclosed in Appendix A.

IV. STATUS OF AMENDMENTS

A total of 36 claims were filed with the original application on April 8, 2004. In an Office Action dated January 24, 2005, claims 1-36 were subject to a restriction requirement under 35 U.S.C. § 121. Appellant(s) elected claims 1-29 and 35-36 drawn to an assembly. Appellant(s) withdrew from consideration in the present application claims 30-34 drawn to a method of making a connector. In a first non-final Office

Action dated March 21, 2005, the Examiner rejected claims 1-29 under U.S.C. § 103(a) as being unpatentable over Kusuda et al in view of Martin et al. Claims 35-36 were rejected under U.S.C. § 103(a) as being unpatentable over Hutchins et al in view of Martin et al. Appellant(s) amended claims 1-15, 17-25, and 35-36, and canceled claims 16 and 30-34. In a final Office Action dated August 18, 2005, the Examiner rejected claims 1-15 and 17-29 under U.S.C. § 103(a) as being unpatentable over Kusuda et al in view of Cummings et al., and further rejected claims 35-36 under U.S.C. § 103(a) as being unpatentable over Hutchins et al in view of Cummings et al. Appellant(s) have made no further amendments to the claims. Appellant(s) filed the present appeal in response to the final Office Action.

V. SUMMARY OF THE INVENTION

The present application teaches an assembly which is designed to mount without solder to a PCB. The assembly includes first and second side flanges which can be designed to allow the main body to be easily removable from a printed circuit board and which leave a footprint of substantially the same size as that of the main body on the printed circuit board. When the instant assembly is fully installed in a mounting surface of a power supply, the assembly as a whole has substantially the same footprint as the main body. The assembly does not require additional space for any wing or anchor to screw or bolt the connector in place, as found in the prior art. Instead, the side flanges securely hold the assembly to a mounting surface, with a footprint substantially the size of the main body. Moreover, the assembly does not require manufacturing steps of screwing the assembly to the power

supply, and unscrewing the assembly for maintenance or servicing. The instant assembly simply snaps into place by hand or machine insertion with minimal effort. No special tools are needed. The side flanges hold the assembly securely to a mounting surface over time and in high vibration environments, thereby reducing failures and maintenance. The assembly is removed by compressing the sides of the flanges to retract ridges from under a mounting surface. This snap-in-place feature may reduce manufacturing defects and operator error as compared to screw-in-place type assemblies.

Accordingly, in one embodiment, the present invention is an assembly for supplying electric power to a printed circuit board. A main body having a plurality of terminal mounting portions are disposed on an upper surface of the main body. A plurality of terminals is coupled to the plurality of terminal mounting portions. Each of the plurality of terminals includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body. A first side flange having a barbed-edge is coupled to a first side surface of the main body. A second side flange having a barbed-edge is coupled to a second side surface of the main body. The first and second side flanges are operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

In another embodiment, the present invention is an assembly for supplying electric power to a printed circuit board. A main body having a terminal mounting portion is disposed on a first surface of the main body. A terminal is coupled to the terminal mounting portion. The terminal includes a substantially flat

surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body. A first flange having a ridge portion is coupled to a second surface of the main body. The first flange is operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

In yet another embodiment, the present invention is an assembly, mounted on a printed circuit board, for connecting to electrical conductors. A non-conductive body having a terminal mounting portion is disposed on a first surface of the body. A terminal is coupled to the terminal mounting portion. The terminal includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the body to a bottom surface of the body. A first clip is coupled to a second surface of the body. The first clip is compressible for mounting on the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the body.

In yet another embodiment, the present invention is a power converter circuit mounted to a printed circuit board. An electrical connector is coupled to the power converter circuit. The electrical connector includes a main body having a terminal mounting portion disposed on a first surface of the main body. The connector also includes a terminal coupled to the terminal mounting portion. The terminal includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body. A first flange having a ridge portion is coupled to a second surface of the main body. The first flange is operable to allow

the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

VI. ISSUES ON APPEAL

1. Whether claims 1-15 and 17-29 are unpatentable under U.S.C. § 103(a) over Kusuda et al in view of Cummings et al.

2. Whether claims 35-36 are unpatentable under U.S.C. § 103(a) over Hutchins et al in view of Cummings et al.

VII. GROUPING OF CLAIMS

The claims on appeal represent a single grouping and stand or fall together.

VIII. ARGUMENT

A. Legal Standard

Section 103(a) of Title 35 provides a standard for patentability of the claimed invention. To evaluate patentability under Section 103(a), the scope and content of the prior art are to be determined, differences between the prior art and the claims at issue are to be ascertained, and the level of ordinary skill in the pertinent art resolved. *Graham v. John Deere Co.* 383 U.S. 1 (1966). In considering the legal standard of obviousness, certain secondary considerations such as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to in order to

establish a *prima facie* case of obviousness: (i) the claimed invention must be considered as a whole; (ii) the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (iii) the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and (iv) reasonable expectation of success is the standard with which obviousness is determined. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

There are three sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obviousness was held improper.)

Obviousness can only be established through combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing

the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

B. Claim 1 is patentable over prior art references Kusuda et al in view of Cummings et al.

The Final Office Action rejected claim 1 under 35 U.S.C. 103 as being unpatentable over Kusuda et al. in view of Cummings et al. Appellant(s) respectfully traverse the rejection and submit the following arguments in favor of reversal of the rejection and allowance of the claim.

In Appellants' response dated June 20, 2005, claim 1 was amended to more clearly distinguish over the prior art references. Claim 1 now recites an assembly for supplying electric power to a printed circuit board. A main body having a plurality of terminal mounting portions is disposed on an upper surface of the main body. A plurality of terminals is coupled to the plurality of terminal mounting portions. Each of the plurality of terminals includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body. A first side flange having a barbed-edge is coupled to a first side surface of the main body. A second side flange having a barbed-edge is coupled to a second side surface of the main body. The first and

second side flanges are operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

The Kusuda reference generally discloses the main body and a plurality of terminals coupled to the plurality of terminal mounting portions. Kusuda teaches a plurality of terminals which have pins extending through the main body for mounting to a board. Kusuda also teaches a plurality of terminals which include substantially flat surfaces for securing wire hardware. What Kusuda does not teach or suggest is an assembly having first and second side flanges. Kusuda does not teach that the first and second side flanges each have a barbed-edge. Moreover, Kusuda does not teach that the first and second side flanges are operable to allow the main body to quickly disengage a printed circuit board. Finally, Kusuda does not teach an assembly where the first and second side flanges quickly disengage a printed circuit board while maintaining a footprint on the printed circuit board of substantially the size of the main body.

In fact, Kusuda suffers from the precise problem solved by the present invention. Kusuda relies on fixed connections to mount its electrical connector to the printed circuit board, see screw holes 35a-b in FIG. 1 and screw holes 38a-b and 39a-b in FIG. 3A. The electrical connector in Kusuda cannot be readily disconnected and would require a tool or specific maintenance and disassembly steps to remove. In any case, the screw mounting cannot be quickly disengaged from a printed circuit board.

The Examiner uses the Cummings reference in an attempt to

show that the differences between Kusuda and claim 1 are obvious. Appellant(s) respectfully traverse the 103 rejection based on Kusuda and Cummings for lack of teaching, suggestion, or motivation to combine the references.

The Cummings reference generally applies to rotary vacuum-electric switches for use with an automobile, e.g. for control of heating, air conditioning, and ventilation. Cummings discloses latching hooks 224a-b, see e.g. FIGs. 7 and 8, adapted to be inserted into respective first and second slots 226a-b in a mounting or supporting panel similar to the simulated panel 228, shown in FIGS. 13-15, which represents a panel component of an automotive vehicle. The left and right hand latching hooks 224a-b are formed with respective lateral ramps 246a-b, facing laterally outwardly, as shown in FIGS. 8 and 12, for deflecting the latching hooks 224a-b and the mounting members 223a-b laterally toward each other, when the latching hooks 224a-b are pushed through the slots 226a-b in the supporting panel 228. The latching hooks 224a-b can be pushed through the slots 226a-b with a linear movement. As taught in Cummings, the purpose for latching hooks 224a-b is to compensate for variations in the thickness of the supporting panel 228, so as to avoid any looseness or play between the supporting panel and the latching hooks 224a-b, despite variations in the thickness of the panel 228.

Yet Cummings goes no further in filling the gap between Kusuda and the novel features of claim 1. First of all, there is absolute nothing in Kusuda that would lead one to consider the teachings of Cummings. Kusuda uses a fixed connection with screws to mount the electrical connector to the printed circuit board. As noted above, the fixed connector approach used by

Kusuda results in the precise problem solved by the present invention.

As for Cummings, rotary vacuum-electric switches has little or no similarity to an electrical assembly for supplying electric power to a printed circuit board. Cummings does not have a main body with a plurality of terminal mounting portions disposed on an upper surface of the main body. Cummings does not show a plurality of terminals coupled to the plurality of terminal mounting portions. There is nothing in Cummings to teach or suggest that each of the plurality of terminals includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body.

Nowhere in the Cummings reference is there any discussion about the problems associated with mounting electrical connectors to printed circuit boards. Cummings is concerned with the ease of mounting a vacuum-electric switch to an automobile panel, e.g. with robotic assist. Cummings uses the looseness of the fittings to allow some variability in automated alignment and thickness of the panel. However, Cummings does not provide any teachings that would allow the main body to be readily disengaged from a printed circuit board and which leave a footprint of substantially the same size as that of the main body on the printed circuit board. Cummings is silent as to space limitations on the mounting surface and ease of removal.

In contrast, the present invention as recited in claim 1 solves the problem of mating electrical connector assemblies to printed circuit boards. When the instant assembly is fully installed in a mounting surface of a power supply, the assembly as a whole has substantially the same footprint as the main

body. The assembly does not require additional space for any wing or anchor to screw or bolt the connector in place, as found in the prior art. Instead, the side flanges securely hold the assembly to a mounting surface, with a footprint substantially the size of the main body. Moreover, the assembly does not require manufacturing steps of screwing the assembly to the power supply, and unscrewing the assembly for maintenance or servicing. The instant assembly simply snaps into place by hand or machine insertion with minimal effort. No special tools are needed. The side flanges hold the assembly securely to a mounting surface over time and in high vibration environments, thereby reducing failures and maintenance. The assembly is removed by compressing the sides of the flanges to retract ridges from under a mounting surface. This snap-in-place feature may reduce manufacturing defects and operator error as compared to screw-in-place type assemblies.

Accordingly, Appellant(s) submit that there is no teaching, suggestion, or motivation, neither explicitly nor implicitly, to combine the Kusuda and Cummings references. Neither Kusuda nor Cummings is solving the same problem as the present invention. The Kusuda reference teaches a power supply terminal assembly that is directed to a power supply terminal assembly for use on a back wiring board (BWB) of a communication device. Yet, the electrical connector in Kusuda has the problem solved by the invention. Cummings has latching hooks, but is not concerned with the ease of removal of the connector assembly from a printed circuit board, nor does Cummings discuss leaving a footprint of substantially the same size as that of the main body on the printed circuit board. Finally, the knowledge of persons of ordinary skill in the art has never before brought

the totality of the present invention together: providing an electrical connector assembly with first and second side flanges each having a barbed-edge and operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body. Before Appellant(s) invention, no such part existed.

A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000) (Court reversed obviousness rejection involving technologically simple concept because there was no finding as to the principle or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention); *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999) (the level of skill in the art cannot be relied upon to provide the suggestion to combine references).

The Examiner's attempt to combine the Kusuda and Cummings references is impermissible hindsight with no teaching, suggestion, or motivation as required by case law under 35 U.S.C. 103(a).

In addition to a lack of motivation to combine the Kusuda and Cummings references, Appellant(s) respectfully submit that

certain secondary considerations overcome the 103 obviousness rejection. The present invention serves to fulfill a long-felt need by industry. Space on printed circuit boards is increasingly at a premium. Manufacturers are continually trying to add circuits and circuit components to the same surface area of a board. Again, in the prior art, assemblies such as that suggested by Kusuda are soldered in place or attached with screws or nuts and bolts. If the assembly taught by Kusuda is soldered in place, it may be difficult to remove should the assembly, the printed circuit board or other board component fail. Moreover, there is extra manufacturing time and cost involved with soldering and de-soldering the assembly from the board.

If a prior art assembly such as that suggested by Kusuda is attached to the chassis or PCB with screws or nuts and bolts, then the assembly is generally configured with side wings or anchors to provide a surface to secure the connector. The anchors are typically located on either side of the main body of the assembly. The screw is run through an opening in the anchor to hold the assembly in place on the chassis or PCB. The anchors of the assembly take up additional space, in excess of the footprint of the main body of the assembly, on the chassis or PCB mounting surface. The additional space needed for an anchor-configured assembly reduces space available on the chassis or PCB for other components. Moreover, the anchors of the assembly are a weaker portion of the assembly and may break under stress. There is manufacturing time required to screw the assembly in place, and the assembly may loosen over time in high vibration environments, or if not properly tightened during installation. A screw-mounted assembly also imposes maintenance

issues when it needs to be replaced.

In light of the foregoing, claim 1 is believed to patentably distinguish over the prior art references, taken singularly or in combination. Appellant(s) have amended claims 2-13 to include the limitations of the base claim. Claims 2-13 are believed to be in condition for allowance as each is dependent from an allowable base claim.

C. Claim 14 is patentable over prior art references Kusuda et al in view of Cummings et al.

Claim 14 recites an assembly for supplying electric power to a printed circuit board. A main body having a terminal mounting portion is disposed on a first surface of the main body. A terminal is coupled to the terminal mounting portion. The terminal includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body. A first flange having a ridge portion is coupled to a second surface of the main body. The first flange is operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

The Kusuda reference generally discloses the main body and a plurality of terminals coupled to the plurality of terminal mounting portions. Kusuda teaches a plurality of terminals which have pins extending through the main body for mounting to a board. Kusuda also teaches a plurality of terminals which include substantially flat surfaces for securing wire hardware. What Kusuda does not teach or suggest is an assembly having first and second flanges. Kusuda does not teach that the first

and second side flanges each have a ridge portion. Kusuda does not teach that the first and second flanges are operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

As noted above, Cummings is not an electrical assembly for supplying electric power to a printed circuit board. Cummings does not have a main body with a plurality of terminal mounting portions disposed on an upper surface of the main body. Cummings does not show a plurality of terminals coupled to the plurality of terminal mounting portions. There is nothing in Cummings to teach or suggest that each of the plurality of terminals includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body.

Nowhere in the Cummings reference is there any discussion about the problems associated with mounting electrical connectors to printed circuit boards. Cummings is concerned with the ease of mounting a vacuum-electric switch to an automobile panel, e.g. with robotic assist. Cummings use the looseness of the fittings to allow some variability in automated alignment and thickness of the panel. However, Cummings does not provide any teachings that would allow the main body to be easily removable from a printed circuit board and which leave a footprint of substantially the same size as that of the main body on the printed circuit board. Cummings is silent as to space limitations on the mounting surface and ease of removal.

Accordingly, Appellant(s) submit that there is no teaching, suggestion, or motivation, neither explicitly nor implicitly, to combine the Kusuda and Cummings references. Neither Kusuda nor

Cummings is solving the same problem as the present invention. The Kusuda reference teaches a power supply terminal assembly that is directed to a power supply terminal assembly for use on a back wiring board (BWB) of a communication device. Yet, the electrical connector in Kusuda has the problem solved by the invention. Cummings has latching hooks, but is not concerned with the ease of removal of the connector assembly from a printed circuit board, nor does Cummings discuss leaving a footprint of substantially the same size as that of the main body on the printed circuit board. Finally, the knowledge of persons of ordinary skill in the art has never before brought the totality of the present invention together: providing an electrical connector assembly with first and second side flanges each having a barbed-edge and operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

The Examiner's attempt to combine the Kusuda and Cummings references is impermissible hindsight with no teaching, suggestion, or motivation as required by case law under 35 U.S.C. 103(a).

For this reason and those reasons previously identified (e.g., lack of motivation and secondary considerations), claim 14 is believed to patentably distinguish over the prior art references, taken singularly or in combination. Claims 15 and 17-24 are believed to be in condition for allowance as each depends from an allowable base claim.

D. **Claim 25 is patentable over prior art references Kusuda et al in view of Cummings et al.**

Claim 25 recites an assembly, mounted on a printed circuit board, for connecting to electrical conductors. A non-conductive body having a terminal mounting portion is disposed on a first surface of the body. A terminal is coupled to the terminal mounting portion. The terminal includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the body to a bottom surface of the body. A first clip is coupled to a second surface of the body. The first clip is compressible for mounting on the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the body.

The Kusuda reference generally discloses the main body and a plurality of terminals coupled to the plurality of terminal mounting portions. Kusuda does not teach a first clip coupled to a second surface of the body nor that the first clip is compressible for mounting on the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the body.

Nowhere in the Cummings reference is there any discussion about the problems associated with mounting electrical connectors to printed circuit boards. Cummings is concerned with the ease of mounting a vacuum-electric switch to an automobile panel, e.g. with robotic assist. Cummings uses the looseness of the fittings to allow some variability in automated alignment and thickness of the panel. However, Cummings does not provide any teachings that would allow the main body to be easily removable from a printed circuit board and which leave a footprint of substantially the same size as that of the main

body on the printed circuit board. Cummings is silent as to space limitations on the mounting surface and ease of removal.

Accordingly, Appellant(s) submit that there is no teaching, suggestion, or motivation, neither explicitly nor implicitly, to combine the Kusuda and Cummings references. Neither Kusuda nor Cummings is solving the same problem as the present invention. The Kusuda reference teaches a power supply terminal assembly that is directed to a power supply terminal assembly for use on a back wiring board (BWB) of a communication device. Yet, the electrical connector in Kusuda has the problem solved by the invention. Cummings has latching hooks, but is not concerned with the ease of removal of the connector assembly from a printed circuit board, nor does Cummings discuss leaving a footprint of substantially the same size as that of the main body on the printed circuit board. Finally, the knowledge of persons of ordinary skill in the art has never before brought the totality of the present invention together: providing an electrical connector assembly with first and second side flanges each having a barbed-edge and operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

The Examiner's attempt to combine the Kusuda and Cummings references is impermissible hindsight with no teaching, suggestion, or motivation as required by case law under 35 U.S.C. 103(a).

For this reason and those reasons previously identified (again, e.g., lack of motivation and secondary considerations) claim 25 is believed to distinguish over the prior art references, taken singularly or in combination. Claims 26-29

are believed to be in condition for allowance as each depends from an allowable base claim.

E. Claim 35 is patentable over prior art references Hutchins et al in view of Cummings et al.

Claim 35 recites a power converter circuit mounted to a printed circuit board. An electrical connector is coupled to the power converter circuit. The electrical connector includes a main body having a terminal mounting portion disposed on a first surface of the main body. The connector also includes a terminal coupled to the terminal mounting portion. The terminal includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body. A first flange having a ridge portion is coupled to a second surface of the main body. The first flange is operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

Appellants(s) respectfully suggest that neither Hutchins nor Martin, taken singularly or in combination, teaches nor suggests all the limitations of the power converter circuit as presently claimed. Hutchins teaches an "AC connector module" having a main body, a terminal mounting portion disposed on a surface of the main body and a terminal coupled to the terminal mounting portion. Hutchins does not teach or suggest a terminal shaft which extends through slots in the main body to a bottom surface of the main body. Instead, Hutchins teaches a "contact block" (see 66 in FIG. 5) having preferably three female contacts (see 82 in FIG. 5) for an external electrical plug to

be inserted. In contrast, the present application teaches shafts which extend through the main body to a bottom surface of the main body where the shafts electrically contact a printed circuit board or other board.

Appellant(s) believe that the Hutchins reference, taken literally and as a whole in combination with the Cummings reference, do not teach all the limitations as set forth in amended claim 35. Because neither Hutchins nor Cummings teaches or suggests the use of shafts which extend through the main body to a bottom surface of the main body which electrically contact a board, amended claim 35 is believed to overcome the prior art references, taken singularly or in combination. In addition, for the reasons cited above (e.g., lack of motivation to combine Cummings latching hooks with Hutchins assembly and the secondary considerations of long felt need), Appellant(s) believe the obviousness rejection is overcome. Claim 36 is believed to be in condition for allowance as it is dependent from an allowable base claim.

IX. CONCLUSION

When properly considered in view of the applicable legal standard, claims 1-15, 17-29, and 35-36 are believed to be patentable in view of the prior art of record. Appellant(s) request reversal of the final rejection and allowance of the subject patent application.

Respectfully submitted,
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APPENDIX A

Claims on Appeal

1. An assembly for supplying electric power to a printed circuit board, comprising:

a main body having a plurality of terminal mounting portions disposed on an upper surface of the main body;

a plurality of terminals coupled to the plurality of terminal mounting portions, wherein each of the plurality of terminals includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body;

a first side flange having a barbed-edge and coupled to a first side surface of the main body; and

a second side flange having a barbed-edge and coupled to a second side surface of the main body, wherein the first and second side flanges are operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

2. The assembly of claim 1, wherein a portion of the first and second side flanges are disposed apart from the main body to form a gap between the portion of the first and second side flanges and the main body.

3. The assembly of claim 2, wherein the first and second side flanges are made with a flexible material.

4. The assembly of claim 3, wherein the electrical connector is adapted for insertion into a mounting surface.

5. The assembly of claim 4, wherein the first and second side flanges are adapted for compressing during insertion into an opening of the mounting surface and to snap back when the barbed-edges of the first and second side flanges clear the mounting surface.

6. The assembly of claim 1, further including a plurality of barrier walls separating the plurality of terminal mounting portions.

7. The assembly of claim 1, wherein the main body is made of non-conductive material.

8. The assembly of claim 1, wherein the plurality of terminals are made with a conductive material.

9. The assembly of claim 1, wherein each of the plurality of terminals includes an opening for receiving a wire connection.

10. The assembly of claim 1, wherein the shafts of the plurality of terminals each include teeth to lock into the slots in the main body.

11. The assembly of claim 1, further including a cover assembly disposed over a portion of the main body.

12. The assembly of claim 1, wherein each of the plurality of

terminal mounting portions includes an opening adapted for receiving securing hardware.

13. The assembly of claim 1, wherein the electrical connector is mounted to a power supply.

14. An assembly for supplying electric power to a printed circuit board, comprising:

a main body having a terminal mounting portion disposed on a first surface of the main body;

a terminal coupled to the terminal mounting portion, wherein the terminal includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body; and

a first flange having a ridge portion and coupled to a second surface of the main body, wherein the first flange is operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

15. The assembly of claim 14, further including a second flange having a ridge portion and coupled to a third surface of the main body.

16. (Canceled)

17. The assembly of claim 14, wherein a portion of the first flange is disposed apart from the main body to form a gap between the portion of the first flange and the main body.

18. The assembly of claim 14, wherein the first flange is made with a flexible material.

19. The assembly of claim 14, wherein the electrical connector is adapted for insertion into a mounting surface.

20. The assembly of claim 19, wherein the first flange is adapted for compressing during insertion into an opening of the mounting surface and to snap back when the ridge portion of the first flange clears the mounting surface.

21. The assembly of claim 14, further including a barrier wall isolating the terminal mounting portion.

22. The assembly of claim 14, further including a cover assembly disposed over a portion of the main body.

23. The assembly of claim 14, wherein the electrical connector is mounted to an electronic assembly.

24. The assembly of claim 23, wherein the electronic assembly is a power supply.

25. An assembly mounted on a printed circuit board for connecting to electrical conductors, comprising:

a non-conductive body having a terminal mounting portion disposed on a first surface of the body;

a terminal coupled to the terminal mounting portion, wherein the terminal includes a substantially flat surface for securing

wire hardware and a shaft extending through a slot in the body to a bottom surface of the body; and

a first clip coupled to a second surface of the body, wherein the first clip is compressible for mounting on the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the body.

26. The assembly of claim 25, further including a second clip coupled to a third surface of the body, wherein the second clip is compressible for mounting.

27. The assembly of claim 25, further including a terminal coupled to the terminal mounting portion and having a shaft extending through a slot in the body to a bottom surface of the body.

28. The assembly of claim 25, wherein a portion of the first clip is disposed apart from the body to form a gap between the portion of the first clip and the body.

29. The assembly of claim 25, further including a barrier wall isolating the terminal mounting portion.

30-34. (Canceled)

35. A power supply mounted on a printed circuit board, comprising:

a power converter circuit; and

an electrical connector coupled to the power converter circuit, the electrical connector including:

(a) a main body having a terminal mounting portion disposed on a first surface of the main body,

(b) a terminal coupled to the terminal mounting portion, wherein the terminal includes a substantially flat surface for securing wire hardware and a shaft extending through a slot in the main body to a bottom surface of the main body, and

(c) a first flange having a ridge portion and coupled to a second surface of the main body, wherein the first flange is operable to allow the main body to readily disengage from the printed circuit board while giving the assembly a footprint on the printed circuit board of substantially the size of the main body.

36. The power supply of claim 35, further including a second flange having a ridge portion and coupled to a third surface of the main body.